

## CLAIMS

What is claimed is:

1. A method for scanning a semiconductor wafer, comprising the steps of:  
scanning the wafer with a plurality of scan lines by creating a relative motion between  
a camera and the wafer,  
acquiring images of regions on the wafer with the camera at a scanning speed in a  
direction of one scan line,  
changing from a current scan line to a new scan line that is to be scanned next, by:
  - providing a deceleration of the relative motion in the scan line direction in the  
scan line until that relative motion comes to a standstill, and
  - providing acceleration in the opposite scan line direction until the scanning  
speed is reached, andsuperimposing at least partially the acceleration and subsequent deceleration of a  
relative motion between the camera and wafer the until the new scan line is  
reached.
2. The method as defined in Claim 1, wherein the decelerating and accelerating of  
the relative motion in the scan line direction and perpendicular thereto begin, at the  
earliest, after imaging of a last region of the current scan line that is to be imaged; and the  
scanning speed in the opposite scan line direction is reached, and the relative speed  
perpendicular to the scan lines goes to zero, at the latest upon reaching a region that is to  
be imaged next.
3. The method as defined in Claim 1, wherein the decelerating and accelerating of  
the relative motion in the scan line direction and perpendicular thereto begin, at the

earliest, after imaging of a last region of the current scan line that is to be imaged; or the scanning speed in the opposite scan line direction is reached, and the relative speed perpendicular to the scan lines goes to zero, at the latest upon reaching a region that is to be imaged next.

4. The method as defined in Claim 1, wherein the deceleration in the scan line direction and the acceleration perpendicular to the scan lines begin simultaneously, and the acceleration in the scan line direction and the deceleration perpendicular to the scan lines are completed simultaneously.

5. The method as defined in Claim 1, wherein the deceleration in the scan line direction begins even before imaging of a region that is the last to be imaged in the current scan line.

6. The method as defined in Claim 1, wherein the scanning speed in the opposite scan line direction is reached only after a region to be imaged next in the new scan line is reached.

7. The method as defined in Claim 1, wherein the greatest relative speed perpendicular to the scan lines is reached upon reaching a relative speed of zero in the scan line direction.

8. The method as defined in Claim 1, wherein the acceleration values upon deceleration and acceleration in and perpendicular to the scan line direction are modified continuously.

9. The method as defined in Claim 1, wherein regions on the wafer adjacent to one another in the scan line direction are imaged with the camera.
10. The method as defined in Claim 9, wherein regions adjacent to one another on the wafer are imaged in such a way that their images partially overlap.
11. The method as defined in Claim 1, wherein the wafer is completely scanned, and images of the entire surface of the wafer are acquired.
12. The method as defined in Claim 11, wherein regions adjacent to one another on the wafer (1) are imaged in such a way that their images partially overlap.
13. The method as defined in Claim 1, wherein the camera defines a rectangularly configured image field having a short side and the short side of the image field is oriented parallel to the scan line direction.
14. An apparatus for scanning a semiconductor wafer in plurality of scan lines comprising: a camera for on-the-fly acquisition of images of a plurality of regions on the wafer, means for generating a relative motion between the camera and the wafer thereby defining a scanning speed in a direction of the scan line, a control device with which, upon a changeover from a current scan line to a new scan line that is to be scanned next, a deceleration of the relative motion in the direction of the scan line is carried out until that relative motion comes to a standstill, and a subsequent acceleration in an opposite

direction of the scan line is carried out until the scanning speed is reached, and the control device performs a superimposition on that relative motion with regard to acceleration and subsequent deceleration of a relative motion between camera and wafer perpendicular to the scan lines until the new scan line is reached.

15. The apparatus as defined in Claim 14, wherein in the context of a rectangularly configured image field of the camera, a short side of the rectangle of the image field is oriented parallel to the scan line direction.

16. The apparatus as defined in Claim 14, wherein a scanning stage is provided, on which the wafer (1) is placeable and securable and with which the relative motion with reference to a stationary camera is performable.

17. An apparatus for scanning a semiconductor wafer comprising: a camera for on-the-fly acquisition of images with an image field of a plurality of regions on the wafer, a plurality of scan lines are defined and the wafer is divided into that plurality of scan lines, means for scanning the wafer with a scanning speed in a scan line direction as a relative motion between the camera and the wafer, the image field of the camera has a rectangular configuration, and a short side of the rectangular configuration of the image field is oriented parallel to the scan line direction.